

# **COALBED METHANE IN KAZAKHSTAN**

## **INVESTMENT OPPORTUNITIES**

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# **Kazakhstan Coal Main Facts Sheet**

- **Coal Provinces- 26**
- **Coal Basins, Fields and Prospects - more than 300**
- **Total Reserves of Coal - 184.8 bln.ton (1200 m)**
- **Six Coal Basins - 86% of total reserves**
- **Carboniferous Coal - 41%**
- **Triassic-Jurassic Coal - 51.5%**
- **Paleogene Coal- 7%**
- **Permian Coal- 0.5%**
- **Coal Production - 58 mln.ton/ year (1999)**

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# **Kazakhstan**

## **Main Coal Basins Reserves**

<b>Karaganda-</b>	<b>51.3 bln.ton</b>
<b>Turgay-</b>	<b>61.9 bln.ton</b>
<b>Ekibastuz-</b>	<b>10.1 bln.ton</b>
<b>Maykubenskiy-</b>	<b>5.7 bln.ton</b>
<b>Iliyskiy-</b>	<b>16.6 bln.non</b>
<b>Zhilanshikskiy-</b>	<b>12.8 bln.ton</b>
<b>Koytas-</b>	<b>1.3 bln.ton</b>
<b>E.Uralskiy-</b>	<b>1.5 bln.ton</b>



# **Kazakhstan Coalbed Methane Main Facts Sheet**

- **Coalbed Methane Reserves- 1.2- 1.7 trlilion.cub.m**
- **Coal Basin CBM Reserves estimated**  
**Karaganda - 550- 750 bln.cub.m**  
**Ekibastuz - 75- 110 bln.cub/m**
- **Coalbed Methane Wells - 134**
- **Coalbed Methane Production 11.2 mln.cub.m/year**
- **Coalbed Methane Emission- 870 mln.cub.m/ year**



# CBM Potential

- **Estimated resources**
  - a) **Karaganda basin 550 -750 mln.cub.m**
  - b) **Ekibastuz basin from 75- 100 mln.cub.m**
  - c) **Zaviyalov field- 14.6- 16.8 mln.cub.m**
  - d) **Samarskiy field- 11.0- 14.2 mln.cub.m**
- **CBM contents in coal beds is one of the highest among the main coal basins in the world**
- **CBM emission estimates in 27-32 mln.cub.m/day**



# Key Factors in Energy Economy

- **Kazakhstan is one of the main coal producer in Middle Asia and FSU region**
- **Kazakhstan is main coal exporter to Russia and Central Asia industrial regions**
- **More than 70% of Kazakhstan energy requirements is supported by domestic coal.**
- **Kazakhstan Metallurgical industry bases mainly on domestic coal (80%)**
- **Social energy consumption of the Central and Eastern Kazakhstan regions rely on coal based power generators**
- **Coal production is 58 mln.ton in 1999 and grown to 63 mln.ton in 2000**



# Potential Role of CBM in Energy Economy

- **Total CBM resources in Kazakhstan estimates more than 1.2- 1.75 bln.cub.m**
- **High contents of CBM in Karaganda and Ekibastuz coal basins provide low coast of energy production**
- **CBM could reduce Natural Gas and Electric Energy deficit in Central Kazakhstan industrial region**
- **CBM could increase efficiency of social energy infrastructure in the new capital Astana and most populated areas of Kazakhstan by replacement of expensive imported Liquid Natural Gas**
- **CBM/CMM Projects may improve profitability of mines by increasing revenues/ decreasing cost**



# **Economic Impact of Coalbed Methane in Kazakhstan**

- Regional & National Economy Improvement
- New energy source reduce dependence on imported Fuels & Gas
- Payment of Local & Republic Taxes
- Thousands of jobs created during Exploration & Development stages
- Several thousands permanent jobs created at Production stage
- Degasification Wells Reduce Risk of Explosions in Coal Mines





# Environmental Impacts of Coalbed Methane

## Positive Impact

- Production of cleanest fossil fuel for domestic consumption
- Captures methane from emission into atmosphere
- Atmosphere pollution reducing due to coal replacement in power generators

## Negative Impact

- Surface disturbance during the drilling operations
- Disposal of produced underground water is an environmental concern



# **Status of CBM/CMM Projects in Kazakhstan**

- **More than 130 exploration wells completed**
- **Totally 21 wells in production**
- **Produced about 11.2 mln.cub.m of CMM in 1999**
- **CBM Reserves estimation technique developed in 1998-1999**
- **CBM Fields/ Plays Exploration technique study**
- **New Government Strategy on CBM/CMM in 2001**



## Current CBM/CMM Activities

- Government Strategy on CBM/CMM study and utilisation is under development
- National Coalbed Methane Centre will be established in 2001
- Ministry of Energy & Mineral Resources (EMR) and National Academy of Science develop the Program on CBM Resources Study
- Azimut Energy Services JSC with Ministry of EMR leadership creates the CBM/CMM National Data Base Project
- National Committee on Global Climate Change develops the Methane Mitigation Program



# **Factors Affecting Development of Coalbed Methane Projects**

- **Coal mines methane poses danger to lives & property**
- **Government legal support of unconventional fuels utilisation**
- **Natural gas consumption & prices grow**
- **Abundance of Coal Reserves**



# **Factors with Negative Impact on CBM/CMM Projects**

- **Lack of Legislative Support of Unconventional Fuels Projects**
- **Increasing Local & State regulatory requirements drive operating cost up**
- **Potential of additional energy & environmental specific taxes**



# **Overseeing or Permitting Government Agencies**

- **Ministry of Energy & Mineral Resources**
- **Ministry of Natural Resources & Ecology**
- **Ministry of Economy & Trade**
- **Ministry of State Revenue**
- **State Committee of Emergency**
- **Regional Governments Offices**
- **National Oil&Gas Company**



# **Potential Barriers to CBM Development**

- **Government control over new investments in the coal industry**
- **E&P Legislation needs CBM adaptation**
- **Lack of Technology**
- **Lack of Mature CBM market**
- **Lack of awareness of environmental issues**
- **Lack of funds for investment in CBM**
- **Lack of information available to outside investors**
- **Lack of experience using CBM/CMM**
- **Training Local personnel required**

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## **Existing Policies Affecting CBM/CMM Developments**

- **A new Petroleum Legislation is under Parliament approval. It will encourage additional foreign investment by providing a comprehensive legal framework for CBM exploration and exploitation.**
- **It offers CBM projects infrastructure status which allow VAT exemption for all exploration period**
- **Provisional Regulation and Rules for Exploration and Development of CBM improve investment climate**
- **A reasonable commercial bonus of \$100 000-300 000 would be paid on declaration of commercial assessment**





# **Future Markets for CBM/CMM Gas**

- **Replacement of Coal in Industrial Boilers**
- **Replacement of Coal in Electric Power Generators**
- **Transit to large cities for domestic consumers use**
- **Government & Private Companies Fleet Fuelling**
- **Conversation of Private vehicles with compressed gas**



# Why Get Involved Now?

CBM projects in Kazakhstan are still relatively high risk, but there are several reasons to be involved:

- establishing a presence at an early stage in development of industrial & consumers gas market
- relatively low cost of entering and studding the CBM & Gas market
- availability of industrial & social infrastructure for gas marketing & consumption
- Possible benefit from carbon emission trading
- Promote equipment & technology sales



# **National Program on Coal Methane Recovery in Kazakhstan**

## **Goals:**

- **Coal Methane National Resource Estimation**
- **CBM Exploration Technique Development**
- **CMM/CBM Production Technique Investigation**
- **CMM Emission Mitigation**
- **Coal Mines Safety Improvement**
- **Environmental Conditions Improvement**
- **Coal Methane Utilisation**



# **National Program on Coal Methane Recovery in Kazakhstan**

## **Stages**

<b>I</b>	<b>Research &amp; Development</b>	<b>2001-2002</b>
<b>II</b>	<b>Testing &amp; Production</b>	<b>2003-2005</b>
<b>III</b>	<b>Production &amp; Utilisation</b>	<b>2006-2010</b>

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## **STAGE I (2001-2002)**

### **STUDIES**

- **Coal Methane National Resources Estimation**
- **Coal & Methane Mines & Wells National DB**
- **National Coalbed Methane Centre organisation**
- **Kazakhstan CBM/CMM Feasibility Study**
- **CBM Exploration Technique development**
- **CBM/CMM Projects Investment Opportunities improvement**

### **RESULTS:**

- **Coal Methane Resources estimated**
- **Priority Targets detected**
- **Exploration Technique selected**
- **Investment Climate improved**



## **STAGE II (2003-2005)**

### **STUDIES**

- **Testing & Production technique development**
- **Legislation Initiatives & Investment Incentives**
- **CMM Pilot Production project in Tentek field**
- **Karagnda Coal Basin CBM/CMM Feasibility Study**
- **CBM Exploration Technique Development**
- **CBM/CMM License Issue**
- **Transportation, Processing & Utilisation Infrastructure investigation**



## **STAGE III (2006-2010)**

### **STUDIES**

- **Karaganda Coal Basin CBM/CMM Feasibility Study**
- **Coal Methane Legislation development**
- **CMM Production in Karaganda Coal basin**
- **CBM/CMM Licenses developments**
- **CBM/CMM Investment Projects in Karaganda & Ekibastuz Coal basins**
- **Transportation, Processing & Utilisation Infrastructure development**